on pp. 961-963. These works are all in German, and the only English mathematician whose works are cited is Dr. Salmon, in Teutonic dress.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

Pollution of the Atmosphere

IN answer to Mr. Joseph John Murphy's letter in NATURE, vol. xxvii. p. 241, stating that the radiation of marsh gas (from the incomplete combustion of coal) would be insignificant compared to that of vapour, I would like to say that their behaviour in the atmosphere is different; the moisture in the air is there, so to speak, on sufferance as long as the pressure and temperature allow it; that is, it is held in suspension by what might be called the capillary attraction of the air of a certain pressure and temperature. If you reduce the temperature you reduce the capacity of air for vapour, first by its reducing the capillary attraction, and secondly, by reducing one of the conditions that makes OH_2 a vapour. If you reduce the pressure, you enlarge the spaces between the molecules and reduce the capillary attraction, if I may apply this term to a gas. This is borne out by the balloon ascents of Mr. Glaisher. At 4 miles high the temperature was 8°, the dew-point was −15°, or a difference of 23°; at 5 miles it was 28°, and at 30,000 feet he states that there is no doubt that the dew-point is a difference of 50°; that is, the higher, the less vapour. But this will not be the case with marsh gas, as it is a permanent gas, and being of less density than even vapour, or about half the density of air, there is no reason why it should not be found in larger quantities at greater altitudes; and I think that its effect there would be that in the temperate zones and at the poles it would radiate its temperature of say from −8 at 30,000 to −30, and produce cold and rain, snow and floods as the storms on the Alps and the floods on the Continent, and in the Tropics to make the nights colder. In fact, it will have a tendency to do the reverse of vapour; vapour retains our heat and shields us from the cold of space. This radiator and absorber will tend to radiate the cold to us or to the vapour in the lower atmosphere, and produce rain and wind.

9, Bootham Terrace, York, January 13 H. A. PHILLIPS

A "Natural" Experiment in Complementary Colours

SINCE I wrote to NATURE last October (vol. xxvi. p. 573) on the above subject, I have been both surprised and gratified to read no less than six communications on the same matter (vol. xxvi. p. 597, vol. xxvii. pp. 8, 78, 150, 174, 241). Only to-day I have received a letter from a German friend drawing my attention to Goethe's observation at Schaffhausen, he evidently being unaware of Mr. W. R. Browne's interesting letter (vol. xxvi. p. 597). My friend goes on to point out that "Gischt" is certainly foam, for in the context Goethe describes how he saw a rainbow in the "Dunst," or mist, thus enabling us to contrast the two words.

The special point of my communication was the excellent illustration, afforded us naturally, of the advantage of toning down the brightness of the white surface, upon which the complementary tint is to be cooked, until that brightness is suitable to that of the exciting colour. In the experience related by me I was unable to see complementary tints in the foam, upon which full sunlight was falling; the glare of light was too strong.

Mr. C. R. Cross (vol. xxvii. p. 150) speaks of seeing them even in strong sunlight on the crests of waves; may not these crests have been in slight shadow, if the waves were just curling over? The example he gives of cloud *shadows* appearing purple on the ocean illustrates excellently my own observations. The letter from Mr. E. J. Bles (vol. xxvii. p. 241) gives a quotation from Sir C. Lyell, but without further detail I do not feel that much weight can be given to his observation from my special point of view. But I do not at all wish to say that complementary tints are not visible on a white surface in full sunshine; but theory and my own observations are certainly in favour of the advantage (and this is all I claimed) of a reduction of brightness to a level comparable with that of the exciting colour.

CHAS. T. WHITMELL

8, Maryland Street, Liverpool, January 15

The Comet

IN my letter relating to the September comet, published in vol. xxvii. p. 108, I was guilty of carelessness in copying from my notes the difference of micrometer readings instead of their value in arc. The value of one revolution of the screw is $15''{\cdot}31075$, and consequently the distances given in my letter should be as follows:—

$$\left.\begin{array}{l} a = 6''{\cdot}57 \\ b = 16{\cdot}90 \\ c = 8{\cdot}34 \end{array}\right\}\text{November 3}$$

$$\left.\begin{array}{l} a = 7{\cdot}36 \\ b = 16{\cdot}51 \\ c = 10{\cdot}15 \end{array}\right\}\text{November 6}$$

W. T. SAMPSON

U.S. Naval Observatory, Washington, D.C., January 2

The Transit of Venus

WILL you be kind enough to make the following correction in your published report of the times of contact of phases of the transit of Venus. The third contact should be 2h. 39m. 57s. in place of 2h. 38m. 57s. These were both inadvertencies. From a comparison of Mr. Finlay's place at the Cape of Good Hope on September 8, I find that these elliptic elements satisfy the place within 7 seconds of arc in Right Ascension and 1·5 seconds of arc in Declination. EDGAR FRISBY

U.S. Naval Observatory, Washington, D.C., January 3

Early Coltsfoot

LAST year I recorded (NATURE, vol. xxv. p. 241) Coltsfoot in blossom on January 6, on the sides of the railway near here, probably an unprecedentedly early date. The mild weather lately prevailing induced me to suspect the former early blossoming might find a parallel *this* year. I saw the plant in flower *this morning*, near the same spot; one flower-stalk was fully four inches high, so it should have been observed some days previously had sunshine prevailed. Last year the winter was practically over (so far as hard frost was concerned) at the beginning of January. Will this be paralleled by the winter of 1882-83? R. MCLACHLAN

Lewisham, January 12

Baird's Hare

SOME of your readers may be interested in reading the following extract in which mention is made of a fact similar to that found in NATURE vol. xxvii. p. 241, about *Baird's Hare*. The extract is from the Life of St. Francis Xavier, by H. J. Coleridge, S.J. In a letter written from Amboyna in May, 1546, Francis says:—

. . . "In the island of Amboyna I have seen what no one would believe . . . a *he-goat* giving suck to his young kids with his own milk; he had one breast which gave every day as much milk as would fill a basin. I saw it with my own eyes, for I would not believe it without seeing it. A respectable Portugese has the goat, and is taking it away, meaning to carry it to Portugal." T. MARTYR

49, High Street, Clapham, S.W., January 15

The Projection of the Nasal Bones in Man and the Ape

THE form and projection of the osseous frame-work of the human nose being considered by anthropologists of considerable value in a racial point of view, a close comparison has recently been made of the profiles of the external nose of man and the nose-case of the anthropoid apes. It has resulted in the conviction (1) that the absence of projection in the nasal bones of the chimpanzee, the gorilla, and the orang constitutes a distinction of more importance than has generally been assigned to it, and not the less so seems the fact (2) that a slight nasal elevation is

© 1883 Nature Publishing Group

observable in the skulls of some of the gibbons, and in the lower monkeys, as, for instance the baboons.

The distinction appears to me to be of the same kind as the erect position of man and the different order of the length of his toes as compared with the ape and many of the lower animals—as for instance the third toe in the lion, bear, dog, badger, and hare.

It should be remembered that the nasal bones in man form merely a bridge or back to the osseous structure of the nose, which is mainly due to the upheaval laterally of the pre-maxillary bones. These are less elevated in other animals, and there is no tilting of the nasals proper. In the chimpanzee and the orang the nasals are as flat as in the hippopotamus. On referring to Prof. Mivart's essay on the apes in the "Encyclopædia Britannica," I find he alludes to the transverse convexity of the bones of the nose, which he considers a marked character of man's skull, entirely absent in the chimpanzee. He adds: the nasals in the orang are exceedingly small and flat, "often even uniting in one bone."

In connection with the subject, it may be mentioned that in Quain's "Anatomy" the external nose is said to be due to the development of the frontal lappets in the fifth or sixth week of the human embryo. It is represented in a woodcut in Balfour's "Embryology" as well-formed and prominent so early as in the ninth week.

The existence of the nasal spine in the nostrils of man, but not in the ape or any of the lower animals, is a fact that has to be accounted for. It appears to have been overlooked, but is of some importance in connection with the development of the human nose. J. PARK HARRISON

January 14

P.S.—The peculiarities of the human nose and the *rationale* of its formation are fully treated of in Prof. Humphry's "Human Skeleton," p. 220.

THE COMET

THE following communication from Dr. Gould of Cordoba Observatory (Argentine Republic) appears in *Astronomische Nachrichten*, No. 2481:—

On September 6 I received information that a bright comet was visible in the east before sunrise. My informant had seen it on the morning of the 5th, and described it as being as bright as Venus and with a brilliant tail. Inquiry showed that it had been seen for several days by *employés* of the railroad and other persons whose duties required them to rise before daylight.

Not only was the morning of September 7 cloudy, but the eastern sky was overcast on every morning for a whole week. On one occasion it seemed that a part of the comet's tail could be distinguished, but not even an approximate position could be obtained for the head. On the morning of the 14th the comet was first seen at the Observatory, and an approximate position obtained from the circles of the equatorial telescope by pointings with the finder. It was then only 13′ south of the equator, and moving northwardly.

The telescope was equipped with the photographic lens and apparatus, and as my series of stellar photographs was nearly completed and its continuance for a few weeks demanded constant attention, I was reluctant to change the adjustments. It has been my uniform policy in Cordoba to confine our instrumental observations to the southern half of the sky, and, in general, to such regions as are not well visible from northern observatories. And as the comet had been conspicuous for more than a week, was on the equator, and the date of equinox was close at hand, it appeared unadvisable to sacrifice important and unique observations for the sake of determinations of the comet's position which I could not doubt were making under more favourable circumstances in the north. Consequently no micrometric observations were undertaken; but rude determinations of position were repeatedly made, from that time on, by use of the finder and the graduated circles, in order to follow the comet's course and deduce approximate elements and ephemeris.

On September 16 the brightness of the head was such, that it was visible with the finding-telescope throughout the day; and I prepared to observe it on the meridian, having followed it with the equatorial until within half an hour of the time of transit. Its declination was about + 0° 52′. But not more than five minutes before that moment a large cloud drifted across the meridian, making the observation impossible.

September 17 the comet was very bright and easily found in the full sunlight. At 10h. 40m. a.m. it was necessary to use a shade-glass, on account of its proximity to the sun; and at 11h. the sun and comet were in the same field of view. I again attempted to observe it upon the meridian, but was prevented by a new difficulty. The comet was hidden by the disc of the sun, and although I carefully scrutinised this and especially the preceding limb as it traversed the field of the meridian-circle, no token of the comet could be seen, nor could it be found during the afternoon. Although it must have passed in front of the sun, I then supposed it to have passed behind it and been occulted.

On Monday the 18th the comet was again on the preceding side of the sun and decreasing in declination at the rate of more than 2½′ hourly. Early in the day its brilliancy attracted popular attention throughout the country, and the "blazing star near the sun" was the one topic of remark. Telegrams came to me from all parts of the country, as well as from Chile and Uruguay, calling attention to the phenomenon. In the small telescope it presented the aspect of a brilliant nebulous mass, having at each end curved appendages like horns or wings, nearly large as the central body, and at their base quite as brilliant; the general form of the whole reminding one of the winged globes carved on ancient monuments. This appearance, unquestionably due to the outrush of glowing vapour from the nucleus, was also exhibited, although to less extent, on the two following days, during both of which the comet remained visible to the naked eye.

As soon as the elements of the orbit could be obtained, its similarity to that of the comet of 1843-1880 was manifest, and the suspicions regarding its identity and the hypotheses to which these gave rise presented themselves forcibly, as I am sure they must have done to astronomers in the northern hemisphere, where I doubt not they have long since been a theme of discussion. The perihelion-distance, although small, seems clearly larger than that of the orbits of 1843 and 1880; but how far such discordance is consistent with the hypothesis of identity must be decided by future investigation. The comparatively small amount of study which I have been able to give to the question leads me to think that the orbit deduced from observations before the perihelion may differ somewhat from that indicated by the observation since September 17; but as the Cordoba observations prior to that date were of a crude description, I have impatiently waited for tidings from other observatories. No. 2459 of the *Astr. Nachr.*, which has just reached me, leads me to fear that micrometric or meridian observations may not have been made before perihelion. In such case the rough positions obtained here with the finder and circles of the equatorial may possess a value far greater than was supposed possible at the time. Those previous to the perihelion are ten in number, and although I do not believe that their probable error can exceed a minute of arc in either coordinate, they are not represented within this limit by the elements deduced from observations made since the perihelion. Should no better positions have been obtained I will send these to you; but I cannot yet abandon the hope that some belated astronomer may have seen this brilliant object in season to secure a series of observations before the perihelion passage.

Micrometric determinations have been made here on various dates since October 17, and have now begun

© 1883 Nature Publishing Group